

JOURNAL

OF

THE CHEMICAL SOCIETY.

CONTAINING

THE PAPERS READ BEFORE THE SOCIETY,

AND

ABSTRACTS OF CHEMICAL PAPERS PUBLISHED IN OTHER JOURNALS.

Committee of Publication :

F. A. ABEL, F.R.S.
 E. ATKINSON, Ph.D.
 C. L. BLOXAM, F.C.S.
 H. DEBUS, Ph.D., F.R.S.
 G. C. FOSTER, B.A., F.R.S.
 MICHAEL FOSTER, M.D., F.R.S.
 F. FRANKLAND, D.C.L., F.R.S.
 J. H. GILBERT, Ph.D., F.R.S.
 J. H. GLADSTONE, Ph.D., F.R.S.
 A. VERNON HARCOURT, M.A., F.R.S.
 W. MARCET, M.D., F.R.S.

N. STOEY-MASKELYNE, F.R.S.
 E. J. MILLS, D.Sc.
 HUGO MÜLLER, Ph.D., F.R.S.
 H. M. NOAD, Ph.D., F.R.S.
 W. ODLING, M.B., F.R.S.
 W. H. PERKIN, F.R.S.
 H. E. ROSCOE, Ph.D., F.R.S.
 W. J. RUSSELL, Ph.D., F.R.S.
 A. VOELCKER, Ph.D., F.R.S.
 A. W. WILLIAMSON, Ph.D., F.R.S.

Editor :

HENRY WATTS, B.A., F.R.S.

Abstractors :

H. E. ARMSTRONG, Ph.D.
 G. T. ATKINSON.
 E. C. BABER.
 JAMES BELL.
 THOMAS BOLAS.
 T. L. BRUNTON, M.D., D.Sc.
 CHRISTOPHER CHILDS, B.A.
 D. FERRIER, M.D.
 WALTER FLIGHT, D.Sc.
 C. HAUGHTON GILL.
 B. J. GROSJEAN.
 C. E. GROVES.
 H. J. HELM.
 EDWARD KINCH.
 M. M. PATTISON MUIR.
 C. H. PIESSE.

H. W. PIKE, Ph.D.
 E. W. PRÉVOST, Ph.D.
 W. RAMSAY, Ph.D.
 JOHN ROBINSON.
 R. ROUTLEDGE, B.Sc.
 MORTYN J. SALTER.
 R. SCHENK, Ph.D.
 C. SCHORLEMMER, F.R.S.
 WATSON SMITH.
 THOMAS STEVENSON, M.D.
 W. A. TILDEN, D.Sc.
 WILLIAM VALENTIN.
 ROBERT WARINGTON.
 JOHN WATTS, D.Sc.
 C. R. A. WRIGHT, D.Sc.

NEW SERIES, Vol. XII. (Entire Series, Vol. XXVII.)

LONDON:

J. VAN VOORST, 1, PATERNOSTER ROW.

1874.

LONDON :

HARRISON AND SONS, PRINTERS IN ORDINARY TO HER MAJESTY, ST MARTIN'S LANE.